

ABSTRACT

5 A camera array captures plural component images
which are combined into a single scene from which
"panning" and "zooming" within the scene are performed.
In one embodiment, each camera of the array is a fixed
digital camera. The images from each camera are warped
and blended such that the combined image is seamless
with respect to each of the component images. Warping
10 of the digital images is performed via pre-calculated
non-dynamic equations that are calculated based on a
registration of the camera array. The process of
registering each camera in the arrays is performed
either manually, by selecting corresponding points or
15 sets of points in two or more images, or automatically,
by presenting a source object (laser light source, for
example) into a scene being captured by the camera
array and registering positions of the source object as
it appears in each of the images. The warping
20 equations are calculated based on the registration data
and each scene captured by the camera array is warped
and combined using the same equations determined
therefrom. A scene captured by the camera array is
zoomed, or selectively steered to an area of interest.
25 This zooming or steering, being done in the digital
domain is performed nearly instantaneously when
compared to cameras with mechanical zoom and steering
functions.